

F9 Cells | 400174

General information

Description

The F9 cell line, a murine embryonal carcinoma model derived from a testicular teratoma of the C57BL/6 mice, serves as an important tool in developmental biology and embryology. F9 cells are capable of differentiation into parietal endoderm when exposed to retinoic acid and dibutyryl cyclic AMP (cAMP). This differentiation is marked by significant changes in cellular behavior and protein expression, including the synthesis of plasminogen activator, laminin, and type IV collagen. These proteins are crucial for understanding the processes of tissue development and matrix formation in early embryonic stages.

It is noted that cAMP's effectiveness in inducing differentiation in F9 cells is conditional upon prior treatment with retinoic acid, indicating a complex interplay between these signaling molecules in triggering developmental pathways. Additionally, F9 cells are characterized by having three copies of the beta 1 integrin gene, which may influence cell adhesion and mobility, further underscoring their utility in studying cell interactions and extracellular matrix composition. Safety profiling of these cells includes testing for ectromelia virus (mousepox), for which they have been found negative, ensuring their suitability for a broad range of experimental applications without the risk of viral contamination.

Organism

Mouse

Tissue

Testis

Disease

Teratocarcinoma

Characteristics

Breed/Subspecies

129/Sv

Age

Embryo

Gender

Male

Morphology

Epithelial-like

Growth properties

Adherent

Regulatory Data

Citation

F9 (Cytion catalog number 400174)

Biosafety level

1

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NCBI_TaxID 10090

CellosaurusAccession CVCL_0259

Biomolecular Data

Viruses MAP-test negative: Sendai, Ektromelie, Polyoma, K-Virus, Kilham, Reo 3, PVM, LCM, M.pulmonis, MVM, Theiler's GD VII, Toolan's H-1, MHV, LDV, RCV/SDA, M-Adenovirus, B.piliformis.

Products Plasminogen activator, laminin, type IV collagen

Handling

Culture Medium DMEM, w: 4.5 g/L Glucose, w: 4 mM L-Glutamine, w: 3.7 g/L NaHCO₃, w: 1.0 mM Sodium pyruvate (Cytion article number 820300a)

Supplements Supplement the medium with 10% FBS

Dissociation Reagent Accutase

Subculturing Remove the old medium from the adherent cells and wash them with PBS that lacks calcium and magnesium. For T25 flasks, use 3-5 ml of PBS, and for T75 flasks, use 5-10 ml. Then, cover the cells completely with Accutase, using 1-2 ml for T25 flasks and 2.5 ml for T75 flasks. Let the cells incubate at room temperature for 8-10 minutes to detach them. After incubation, gently mix the cells with 10 ml of medium to resuspend them, then centrifuge at 300xg for 3 minutes. Discard the supernatant, resuspend the cells in fresh medium, and transfer them into new flasks that already contain fresh medium.

Seeding density Coat cell culture flasks with Gelatine. 1×10^4 cells/cm² will yield in a confluent layer in about 4 days.

Fluid renewal 2 to 3 times per week

Post-Thaw Recovery After thawing, plate the cells at 5×10^4 cells/cm² and allow the cells to recover from the freezing process and to adhere for at least 24 hours.

Freeze medium As a cryopreservation medium, we use complete growth medium (including FBS) + 10% DMSO for adequate post-thaw viability, or CM-1 (Cytion catalog number 800100), which includes optimized osmoprotectants and metabolic stabilizers to enhance recovery and reduce cryo-induced stress.

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Thawing and Culturing Cells

1. Confirm that the vial remains deeply frozen upon delivery, as cells are shipped on dry ice to maintain optimal temperatures during transit.
2. Upon receipt, either store the cryovial immediately at temperatures below -150°C to ensure the preservation of cellular integrity, or proceed to step 3 if immediate culturing is required.
3. For immediate culturing, swiftly thaw the vial by immersing it in a 37°C water bath with clean water and an antimicrobial agent, agitating gently for 40-60 seconds until a small ice clump remains.
4. Perform all subsequent steps under sterile conditions in a flow hood, disinfecting the cryovial with 70% ethanol before opening.
5. Carefully open the disinfected vial and transfer the cell suspension into a 15 ml centrifuge tube containing 8 ml of room-temperature culture medium, mixing gently.
6. Centrifuge the mixture at 300 x g for 3 minutes to separate the cells and carefully discard the supernatant containing residual freezing medium.
7. Gently resuspend the cell pellet in 10 ml of fresh culture medium. For adherent cells, divide the suspension between two T25 culture flasks; for suspension cultures, transfer all the medium into one T25 flask to promote effective cell interaction and growth.
8. Adhere to established subculture protocols for continued growth and maintenance of the cell line, ensuring reliable experimental outcomes.

Incubation Atmosphere

37°C, 5% CO₂, humidified atmosphere.

Shipping Conditions

Cryopreserved cell lines are shipped on dry ice in validated, insulated packaging with sufficient refrigerant to maintain approximately -78 °C throughout transit. On receipt, inspect the container immediately and transfer vials without delay to appropriate storage.

Storage Conditions

For long-term preservation, place vials in vapor-phase liquid nitrogen at about -150 to -196 °C. Storage at -80 °C is acceptable only as a short interim step before transfer to liquid nitrogen.

Quality Control & Molecular Analysis

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Sterility

Mycoplasma contamination is excluded using both PCR-based assays and luminescence-based mycoplasma detection methods.

To ensure there is no bacterial, fungal, or yeast contamination, cell cultures are subjected to daily visual inspections.